

~~40. A nucleic acid encoding a chimeric protein which binds a nucleic acid comprising a composite binding site, wherein the chimeric protein comprises at least two nucleic acid-binding domains, referred to as the first domain and the second domain, each of which binds a sequence which is a portion of the composite binding site, and which first and second domains are selected from distinct families of nucleic acid binding domains.~~

41. The nucleic acid of claim 40, wherein the composite binding site is DNA and the nucleic acid binding domain is a DNA-binding domain.
42. The nucleic acid of claim 41, wherein one DNA-binding domain is selected from the group consisting of a homeodomain, a zinc finger domain, a basic region/helix-loop-helix (bHLH) domain, a helix-turn-helix domain, a leucine zipper, a DNA binding domain of a steroid receptor and variants thereof.
43. The nucleic acid of claim 42, wherein one DNA-binding domain is a homeodomain.
44. The nucleic acid of claim 42, wherein one DNA-binding domain is a zinc finger.
45. The nucleic acid of claim 44, further comprising a homeodomain.
46. The nucleic acid of claim 43, wherein the homeodomain is from an Oct-1 protein or variant thereof.
47. The nucleic acid of claim 44, wherein the zinc finger is from a protein selected from the group-consisting of transcription factor IIIA, Zif268, SW15, Krüppel, Hunchback and variants thereof.
48. The nucleic acid of claim 45, wherein the homeodomain is from an Oct-1 protein and the zinc finger domain is from Zif268.
49. The nucleic acid of claim 48, wherein the chimeric protein comprises zinc fingers 1 and 2 of Zif268 a glycine-glycine-arginine-arginine linker and an Oct-1 homeodomain.

50. The nucleic acid of claim 48, which encodes ~~ZFHD1~~.
51. The nucleic acid of claim 42, wherein the bHLH domain is from a protein selected from the group consisting of Daughterless, Achaete-scute (T3), MyoD, E12 E47 and variants thereof.
52. The nucleic acid of claim 42, wherein the helix-turn-helix domain is from a protein selected from the group consisting of MAT α 1, MAT α 2, MAT α 1, Antennapedia, Ultrabithorax, Engrailed, Paired, Fushi tarazu, HOX, Unc86, Oct1, Oct2, Pit and variants thereof.
53. The nucleic acid of claim 42, wherein the leucine zipper is from a protein selected from the group consisting of GCN4, C/EBP, c-Fos, c-Jun, JunB and variants thereof.
54. The nucleic acid of claim 42, wherein the steroid receptor is a glucocorticoid receptor or variant thereof.
55. The nucleic acid of claim 40, wherein the first and second domains are separated by at least one amino acid.
56. The nucleic acid of claim 40, wherein the chimeric protein binds with higher affinity to the composite binding site than to the portions of the composite binding site to which the first and the second nucleic acid binding domains bind.
57. The nucleic acid of claim 40, wherein the ~~chimeric protein~~ further comprises an additional domain.
58. The nucleic acid of claim 57, wherein the additional domain is a regulatory domain.
59. The nucleic acid of claim 58, wherein the regulatory domain is an activation domain.

60. ~~The nucleic acid of claim 59, wherein the activation domain is an Herpes Simplex Virus VP16 activation domain.~~
61. The nucleic acid of claim 58, wherein the regulatory domain is a repression domain.
62. The nucleic acid of claim 61, wherein the repression domain is from a Krüppel protein.
63. The nucleic acid of claim 57, wherein the additional domain is a nucleic acid cleavage domain.
64. The nucleic acid of claim 63, wherein the nucleic acid cleavage domain is the FokI cleavage domain.
65. The nucleic acid of claim 57, wherein the additional domain is selected from the group consisting of a domain interacting with a cellular component, a domain which controls the stability of the chimeric protein, and a domain which controls subcellular localization.
66. A nucleic acid encoding a chimeric protein which binds a nucleic acid comprising a composite binding site, wherein the chimeric protein comprises at least two nucleic acid-binding domains, referred to as the first domain and the second domain, each of which binds a sequence which is a portion of the composite binding site, and which first and second domains
- (i) do not occur in the same protein in nature;
 - (ii) do not occur in the same protein in nature in the order in which they are present in the chimeric protein; and/or
 - (iii) do not occur in nature with the same spacing that is present in the chimeric protein, and wherein the chimeric protein further comprises an additional domain.
67. The nucleic acid of claim 66, wherein the ~~additional~~ domain is a regulatory domain.
68. The nucleic acid of claim 67, wherein the regulatory domain is an activation domain.

69. The nucleic acid of claim 68, wherein the regulatory domain is a repression domain. -

70. The nucleic acid of claim 66, wherein the additional domain is a nucleic acid cleavage domain. -

~~71. A nucleic acid encoding a transcription factor comprising an activation domain and a~~
chimeric nucleic acid binding domain which binds a nucleic acid comprising a composite binding site, wherein the chimeric nucleic acid binding domain comprises a first domain and a second domain, each of which binds a sequence which is a portion of the composite binding site, and which first and second domains

- (i) do not occur in the same protein in nature;
- (ii) do not occur in the same protein in nature in the order in which they are present in the chimeric protein; and/or
- ~~(iii) do not occur in nature with the same spacing that is present in the chimeric protein.~~

72. ~~A vector comprising a nucleic acid of any one of claims 40.~~ -

73. The vector of claim 72, comprising expression control sequences permitting gene expression in eukaryotic cells.

74. A kit comprising a nucleic acid of claim 72 and a gene operably linked to a composite binding site to which the chimeric protein encoded by the vector binds.

75. A method for modulating expression of a gene in a cell, comprising modulating the level of a chimeric protein in a cell which includes a gene operably to a composite binding site to which the chimeric protein binds, wherein the chimeric protein comprises at least two nucleic acid-binding domains, referred to as the first domain and the second domain, each of which binds a sequence which is a portion of the composite binding site, and which first and second domains

- (i) do not occur in the same protein in nature;
- (ii) do not occur in the same protein in nature in the order in which they are present in the chimeric protein; and/or

(iii) do not occur in nature with the same spacing that is present in the chimeric protein.

whereby the chimeric protein binds the composite binding site, thereby modulating expression of the gene in the cell.

76. The method of claim 75, wherein the chimeric protein further comprises an additional domain.
77. The method of claim 76, wherein the additional domain is a regulatory domain.
78. The method of claim 77, wherein the regulatory domain is an activation domain.
79. The method of claim 78, wherein the activation domain is an Herpes Simplex Virus VP16 activation domain.
80. The method of claim 77, wherein the regulatory domain is a repression domain.
81. The method of claim 75, wherein one nucleic acid-binding domain is selected from the group consisting of a homeodomain, a zinc finger domain, a basic region/helix-loop-helix (bHLH) domain, a helix-turn-helix domain, a leucine zipper, a DNA binding domain of a steroid receptor and variants thereof.
- ~~82. The method of claim 81, wherein one nucleic acid-binding domain is a homeodomain.~~
83. The method of claim 81, wherein one nucleic acid-binding domain is a zinc finger domain.
84. The method of claim 83, wherein the chimeric protein further comprises a homeodomain.
85. A method for producing a cell for use in the method of claim 75, comprising introducing into a cell a nucleic acid encoding the chimeric protein.